

Transportation:

Air Service:

Twelve airlines currently serve Tucson International Airport (TIA), providing non-stop service to 16 cities and connections to more than 121 destinations. There are 60 daily flights with approximately 7,700 seats available. For more information go to the TIA website at: www.tucsonairport.org/html/tia_airlinelinks.html

Rental Cars:

Seven rental car agencies are located at Tucson International Airport (TIA) for your convenience.

- Alamo 1-800-327-9633, 520-807-0446
- Avis 1-800-331-1212, 520-294-1494
- Budget 1-800-527-0700, 520-573-8475
- Dollar 1-800-800-4000, 520-573-8486
- Enterprise 1-800-736-8222, 520-573-5336
- Hertz 1-800-654-3131, 520-573-5201
- National 1-800-227-7368, 520-806-4255

Shuttle Service:

Shuttle service is available from Tucson International Airport directly to the Viscount. Typical transportation charges are approximately \$20.00 (one way) \$32.00 (round trip).

If you are interested in this Shuttle service, contact Arizona Stagecoach at (520) 881-4111 when you arrive.



Arizona Department
of Transportation



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5th Biennial Workshop

INTERSTATE TECHNICAL GROUP ON ABANDONED UNDERGROUND MINES

APRIL 21-23, 2004
Tucson, AZ

REGISTER TODAY

Welcome:

The 5th Biennial Workshop offered by the Interstate Technical Group on Abandoned Underground Mines (ITGAUM) will focus on subjects related to the effects of mine development on highway planning, design, construction, maintenance and infrastructure development. Related topics pertaining to sub-structure exploration and geophysical testing, which identify potential hazards associated with abandoned mines will also be addressed and relevant case histories will also be discussed.

This important transportation-related workshop on abandoned underground mines is co-hosted by the **Arizona Department of Transportation, the Arizona State Mine Inspectors Office,** and the **Arizona Geological Survey** and co-sponsored by both the **Federal Highway Administration** and the **Transportation Research Board.**

**Call the Viscount Hotel
By March 19 at
1-800-527-9666**

and mention you are with the
Interstate Technology Group #4421
for a lodging rate of \$58 per night

Conference Site:

The 5th Biennial ITGAUM workshop will be held at the Viscount Suite Hotel, 4855 East Broadway, in Tucson, AZ, 85711. The hotel is located in mid-town Tucson near the intersection of Swan Rd. and East Broadway Boulevard, approximately 2 miles east of the Randolph Park Municipal Golf Course.

Tucson is located in southeastern Arizona Sonora Desert Region. April temperatures range from 80 to 95 degrees. The hotel is within easy access to the Saguaro National Park, the Coronado National Forest and the historic western and mining communities of Tombstone and Bisbee.

Registration Information:

Name: _____
Agency: _____
Address: _____

City: _____ State: _____ Zip: _____
Phone: _____ Fax: _____

To pay your register fee, please complete this form with your **\$135.00** check made payable to:

"Cardinal Information Resources, Inc"

Forward this form and your check by April 5, 2004 to:

ITGAUM
C/o ADOT, Geotech Design
1221 N 21st Avenue, Phoenix, AZ 85009

**Credit cards cannot be accepted. The registration fee includes technical sessions, refreshments at breaks, Wednesday field trip (lunch included), and workshop proceedings.*

All speakers must pay full registration.
Late and "walk in" registrants will be charged an additional \$30.00 fee.
(No exceptions)

Lodging:

Reservations are the responsibility of each attendee. A block of rooms has been reserved at the discounted rate of **\$58.00 per night** at the Viscount for participants. The rates will be honored until all rooms are assigned. **Another group has already reserved a large block of rooms so it may be prudent to reserve your room early.**

<http://www.viscountsuite.com>,
<http://www.phoenix-az-hotels.com/tucson/viscount-suite-hotel.htm>

**Registrants can pick up their Workshop information packets, in the Viscount Suite Hotel lobby area:*

Tuesday, April 20, 2004
4:00 p.m. to 7:00 p.m.
Wednesday, April 21, 2004
7:30 a.m. to 5:00 p.m.

Welcome IceBreaker, Viscount
Registration, Viscount Suites Lobby

7:30 a.m. Registration, Viscount Suites Lobby

8:00 a.m. Welcoming Remarks ITGAUM 2004
*Nick Priznar ADOT; Thomas Lefchik FHWA;
 Larry Fellows, Director AZ Geological Survey;
 David Hamn, Assistant State Mine Inspector*

Nick Priznar, Engineering Geologist, Arizona DOT

8:40 a.m. An overview of California's efforts to address abandoned underground mines
Michael Robinson, Haz. Waste Coord, Caltrans

**9:00 a.m. Abandoned underground coal mines under
new alignment, U.S. 54 — Fort Scott, KS**
Richard Ryan, Regional Geologist, KDOT

9:20 a.m. Use of geophysical methods, investigation by drilling, and remediation of Highway T subsidence, Macon County, MO
George H. Davis R.G. Missouri DOT, David C. Smith, Missouri Dept of Nat'l Resources

9:40 a.m. Update of activities in Ohio
L. Rick Ruegsegger P.E., ODOT

9:00 a.m. Underground mining impacts as experienced by North Carolina
Mr. David Hering, Project Engineering Geologist, NCDOT

9:20 a.m. Coffee Break

9:40 a.m. MSHA/OSM geophysics demonstrations to locate abandoned mines
Dr. Kevin Wu, MSHA

10:00 a.m. Abandoned Mine Issues
Priscilla Duskin, Engineer Geologist III, NYSDOT

10:20 a.m. Iowa Update
Matthew Trainum, Geologist, Iowa DOT

10:40 a.m. Michigan Abandoned Mine Issues
*Richard Endres, Foundation Analysis Engineer,
Michigan DOT*

11:00 a.m. Indiana Abandoned Mine Project Update
*Jon Paauwe, Geotechnical Geologist III,
Indiana DOT*

11:20 a.m. TRB Meeting Information Update
L. Rick Ruegsegger, P.E., ODOT

11:40 a.m *Mr. William Dodd N. Dakota Pub.Service Com.*

12:00 LUNCH (Provided)

**1:00 p.m. Arizona Abandoned and Inactive
Mines Program**
Alene McCracken, AZ State Mine Inspector Office

Kevin M. O'Connor, GeoTDR, Inc. (Ohio)
Joseph Crawford, USG Co. (Illinois)
Kelvin Price, USG Co. (Virginia)
Roger Sharpe, USG Co. (Illinois)

1:40 p.m. Stability evaluation and remediation of a critical northern Canadian highway over an abandoned gold mine
Dr. Marc C. Bétournay, Senior Scientist Natural Resources, Canada

**2:00 p.m. The stability analysis of I-196 over the
Domtar Gypsum Mine, Grand Rapids, MI**
Stan Vitton, Assoc. Professor, Michigan Tech
Tom Hynes, Supervising Engineer,
Pavement Structures Group, Michigan DOT

2:20p.m. Mine Map Interpretation
Laurance Beck, Skelly and Loy, (Pennsylvania)

3:00 p.m. Subsidence management of the New Mineral City Mine, Fort Dodge, IA
Joseph Crawford, US Gypsum Co., (Illinois)
Jon Blazic, US Gypsum Co., (Iowa)
Matt Benzie, US Gypsum Co., (Iowa)
Kevin O'Connor, GeoTDR, Inc., (Ohio)

**3:20 p.m. Disruption to transportation systems
caused by abandoned mine workings**
Colin J.F.P. Jones, University of Newcastle UK

3:40 p.m. Synthetic aperture radar interferometry (InSAR) in defining mine-related ground deformation/subsidence hazards
Ralph Weeks, AMEC Earth and Environmental

4:00 p.m. Caving and Subsidence at San Manuel, AZ
Lou Sandibak, Geologist/Engineer

THURSDAY, APRIL 23
Field Trip
To San Manuel Mine
(Courtesy of BHP Copper)
8:00 a.m. Depart Viscount Hotel
(Est. Travel Time 1 hour)

Upon arriving at the Mine, we will **inspect and view subsidence features**; break for lunch; and resume with the **inspection of abandoned highway alignment and review of other subsidence features**. We will conclude our trip **observing mine closure activities**, and depart the Mine enroute to the hotel at 2:00 p.m.

7:00 a.m. ITGAUM Group Breakfast Discussion

8:00 a.m. Rock mass displacements and surface disruptions anticipated from weak rock masses of metal mines
*Dr. Marc C. Bétournay Senior Scientist,
Natural Resources (Canada)*

8:40 a.m. Tunnel enlargement and rehabilitation
Richard Humphries, Golder Associates Inc.,
(Georgia)

9:10 a.m. Characterizing potential bridging ground conditions using the refraction micro tremor (ReMi) surface seismic technique

Michael L. Rucker, PE, AMEC Earth and Environmental Inc., (Arizona)

**9:30 a.m. Case Studies: 2-D and 3-D Resistively for
locating voids beneath highways**
*Richard W. Hammack, National Energy
Technology Laboratory, (Pennsylvania)*

9:50 a.m. Electrical imaging of deep-mine voids
Peter J. Hutchinson, Laura S. Barta, The Hutchinson Group, Ltd., (Pennsylvania)

**10:10 a.m. Electromagnetic geophysical techniques
for location of abandoned mines**
*Dr. Ben K. Sternberg, Professor, and Director,
Laboratory for Advanced Subsurface Imaging,
University of Arizona*

10:30 a.m. Break

*J. Jiang, Kalgoorlie Consolidated Gold Mines,
(Kalgoorlie, Western Australia)*

11:10 a.m. Investigating the potential impacts of roadway widening near the Arabian Mine, SR 68, Mohave County, AZ
Robert Cummings, Saguaro Geo Services (Arizona)
Nick Priznar, Engineering Geologist, Arizona DOT

11:30 a.m. Identifying abandoned mineshafts & shallow mine workings close to railways
Prof. M.C. Forde, Univ. of Edinburgh, Scotland

11:50 a.m. Seismic imaging as a means to investigate abandoned underground mines
Edwin J. Kase, NSA Geotechnical Services, Inc.
Timothy Ross, NSA Geotechnical Services, Inc.
Robert W. Henthorne, Chief Geologist, Kansas DOT

Lunch

1:00 p.m. A comparison of non-invasive geophysical methods for mapping near surface voids
Khamis Haramy & Matthew De Marco, Central Federal Lands Highway Division, FHWA Denver
Todd M. Meglich, Blackhawk GeoServices, (Colorado)

1:30 p.m. Grouting in abandoned coal mines
David Knott, P.E. HDR Engineering, Pennsylvania

2:00 p.m. Historical landslides and assessing future risk for the development of the Jerome Rest Area
*Scott D. Neely, P.E. Geotechnical Services
 Manager Terracon, Phoenix, AZ*

2:30 p.m. Ground penetrating radar: An effective tool for locating dry caves along S.R. 69 near Mayer, Yavapai County, AZ
Kenneth M. Euge R.G., Principal Geologist, Kerry Hennon, R.Gp., Jason C. Williams, G.I.T., Geological Consultants Inc., Arizona
Nick Priznar, Geologist, ADOT, Arizona

3:00 p.m. OPEN DISCUSSION

4:00 p.m. END OF PROGRAM